

**Navy Advancement Center**

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# **Advancement Handbook for Interior Communications Electrician**

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## **PREFACE**

The purpose of the Advancement Handbook is to help you focus your preparation for Navywide advancement-in-rating examinations. The bibliographies (BIBs) together with this handbook form a comprehensive examination study package. Since this handbook provides skill and knowledge components for each paygrade of the Interior Communications Electrician rating, it helps you concentrate your study on those areas that may be tested. This feature will help you get the most out of your study time.

Each page in Parts 1 through 4 of this Advancement Handbook presents general skill areas, specific skill areas, the knowledge factors associated with each skill area, the pertinent references that address each skill, and the subject areas that may be covered on the examination. The skill statements describe the skills you are expected to perform for each paygrade. The skill statements are cumulative; that is, you are responsible for the skills for the paygrade you are competing for, your present paygrade, and all paygrades below.

Although this handbook is very comprehensive, it cannot cover all the tasks performed in the rating. As a result, the advancement examinations may contain questions more detailed than described in the “*Exam Expectations*” section of the skill areas.

Remember that advancement competition is keen, so your keys to advancement include not only comprehensive advancement examination study but also sustained superior performance.

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## Part 1

### Advancement Handbook for IC3

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Switches, Protective Devices and Cables</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on automatic bus transfers (ABT) and manual bus transfers (MBT)</b>
<i>Knowledge</i> you should have to perform this skill:	Describe the operating principles. Identify the safety precautions, equipment, and procedures used to complete the following: <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Test</li> <li>• Troubleshoot (MBT only)</li> <li>• Replace components (MBT only)</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430, 320</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• Interior Communications Switchboard</li> <li>• Navy Occupational Safety and Health (NAVOSH) Program Manual, OPNAVINST 5100.19</li> <li>• Ships' Maintenance Material Management (3-M) Manual, OPNAVINST 4790.4</li> <li>• Navy Electricity and Electronics Training Series (NEETS) Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on maintenance procedures and periodicity of maintenance, problems and their causes, and operating procedures.

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General IC <i>Skill Area</i>	<b>Switches, Protective Devices, and Cables</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance, install, and band cables (other than fiber optic cables)</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Inspect</li> <li>• Test</li> <li>• Troubleshoot</li> <li>• Measure</li> <li>• Install</li> <li>• Band</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320</li> <li>• Military Standard, Cable and Cord, Electrical; Identification, Marking, and Color Coding of</li> <li>• Cable Comparison Guide</li> <li>• Cable Comparison Handbook</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electronic Installation and Maintenance Handbook (EIMB)</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on various types and characteristics, installation procedures, measurement, troubleshooting, and inspection of cables/cable ways.

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General IC <i>Skill Area</i>	<b>Switches, Protective Devices, and Cables</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on and test circuit breakers</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, different types equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on different types and parts of circuit breakers and operating, testing, and maintenance procedures used to maintain circuit breakers.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Switches, Protective Devices, and Cables</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Rig and unrig casualty/shore power cables</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to complete the following:</p> <ul style="list-style-type: none"> <li>• Rig and unrig casualty power</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 079, 300, 320</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on equipment and procedures for rigging and unrigging casualty/shore power cables.



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General IC <i>Skill Area</i>	<b>Switches, Protective Devices and Cables</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Inspect fiber optic cables</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the equipment and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Inspect</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 408</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21, 24</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on different types, operation, theory, equipment used, and maintenance procedures for fiber optic cables and equipment.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Power Distribution Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on and test voltage regulators</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the equipment and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on different types, operation, theory, equipment used, and maintenance procedures for voltage regulators.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Power Distribution</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Test and replace fuses</b>
<i>Knowledge</i> you should have to perform this skill:	Describe the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Test</li> <li>• Replace</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on safety procedures, fuse characteristics and ratings, and equipment used to test and replace fuses.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Power Distribution</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Inspect switchboard meters and transformers</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect switchboard meters</li> <li>• Replace transformers</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NEETS Modules 1, 2, 3, 4, 16, 19, 21</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• Measure Users Manual</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, different types of meters, and sensitivity of meters. There also may be questions on why transformers are used and how they are wired.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Power Distribution Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on IC test panels</b>
<i>Knowledge</i> you should have to perform this skill:	Define operational theory. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Test</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 320, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation of the test panel, basic wiring techniques, and the use of test equipment.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Power Distribution Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on power supplies</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 302, 310, 313, 320, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 7, 8, 16, 19, 21</li> <li>• NAVSEA Technical Manual, Navy Installation and Maintenance Book</li> <li>• NAVSEA Technical Manual for IC Switchboards</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on how power supplies work, maintenance procedures, and equipment used to test transformers.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Amplified Voice and Call Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Operate, perform maintenance on and test central amplifier systems</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the equipment and procedures used to complete the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Align</li> <li>• Clean and inspect</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• Shipboard Announcing System 1MC and 6MC, 0365-LP-283-5100</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory, central amplifier alignment, operation, maintenance, and testing procedures.

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General IC <i>Skill Area</i>	<b>Amplified Voice and Call Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on and test microphone control stations</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the procedures and equipment used to complete the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Test</li> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• NAVSEA Technical Manual for Microphone Control Station, SE120-AE-MMA-010</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on maintenance procedures, operating and testing microphone control stations, microphone theory, and characteristics.



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General IC <i>Skill Area</i>	<b>Amplified Voice and Call Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on intercommunicating stations</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the procedures and equipment used to complete the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean, inspect, and lubricate</li> <li>• Test</li> <li>• Troubleshoot</li> <li>• Repair and replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• LS-518A/SIC and LS-519A/SIC SE105-AK-MMO-010</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on amplifier theory, maintenance and test procedures, troubleshooting, and repairing intercommunicating units.

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General IC <i>Skill Area</i>	<b>Amplified Voice and Call Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on loudspeakers</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the procedures and equipment used to perform the following:</p> <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Test</li> <li>• Adjust</li> <li>• Troubleshoot and repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 16, 19, 20, 21</li> <li>• Maintenance Manual for Loudspeakers, SE-BE-MMM-010</li> <li>• Loudspeaker, Dynamic, NAVSHIPS 365-1890</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on speaker theory, characteristics, impedance, coupling methods, and maintenance.

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General IC <i>Skill Area</i>	<b>Amplified Voice and Call Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on sound-powered telephone call systems</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the procedures and equipment used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Test</li> <li>• Troubleshoot and repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on basic wiring, components, operation, theory, designations, and maintenance procedures.

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General IC <i>Skill Area</i>	<b>Telephone Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on sound-powered telephone switchboards, switch boxes, and circuits</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the equipment required and maintenance procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Test</li> <li>• Align</li> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> <li>• Circuit designation</li> <li>• Cross-connect circuits</li> <li>• Isolate circuits</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 079, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions circuit designations, theory of operation, problem indicators, repair procedures, alignment procedures, and possible problems with alignment.

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General IC <i>Skill Area</i>	<b>Telephone Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on Type G and F telephones, and dial telephone systems</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to complete the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Test</li> <li>• Adjust</li> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> <li>• Rig and unrig shore connections</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• NAVSEA Technical Manual, Telephone Set Type G</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation; trouble indications on both telephones and exchanges; basic operation and components of different telephone systems, such as Dimension 2000, Mytel/Difinity, IVCS; and connections to shore units.

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General IC <i>Skill Area</i>	<b>Telephone Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on sound-powered telephones and headsets</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to complete the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Test</li> <li>• Troubleshoot</li> <li>• Repair and replace</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 079, 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory, common problems, and maintenance procedures.

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General IC <i>Skill Area</i>	<b>Telephone Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Rig and unrig emergency sound-powered telephone circuits</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, circuits, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Rig and unrig salt and pepper cable reels</li> <li>• Cross-connect circuits</li> <li>• Isolate stations</li> <li>• Use circuit X40J</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 079, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on proper routing, circuits, and equipment used to rig and unrig emergency communications.

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General IC <i>Skill Area</i>	<b>Telephone Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on sound-powered telephone growlers</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean, inspect, and lubricate</li> <li>• Test</li> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• Sound-Powered Telephone System, AN/WTC-2(V), SE165-AD-MMM-010</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on circuit designations, sound-powered theory, and circuit troubleshooting techniques.



## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Telephone Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on sound-powered telephone amplifiers</b>
<i>Knowledge</i> you should have to perform this skill:	Describe amplifier theory. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• NAVSEA Technical Manual, Sound-Powered Telephone System, AN/WTC-2(V)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on amplifier theory, testing and troubleshooting procedures, and maintenance.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Alarms and Warning Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on alarm sensing devices</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Describe the different types. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Repair</li> <li>• Replace components/devices</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430, 504</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, different types of sensing devices, which device is used in a particular alarm circuit, circuit designations, and repair and replacement procedures.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Alarms and Warning Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on alarm switchboards</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Test</li> <li>• Adjust components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430, 504</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• NAVSHIPS Technical Manual, Alarm Switchboard</li> <li>• NAVSEA Technical Manual, Type IC/SM Alarm Switchboards</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, operating modes, tones generated during operation, and adjusting sensing devices.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Ship's Entertainment Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Operate and perform maintenance on public address sets</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Rig and unrig</li> <li>• Clean and inspect</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 16, 19, 21</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NAVSEA Technical Manual for Ship's Entertainment and Training System</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operating procedures, alignment, maintenance, and testing techniques.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Gyrocompass Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on synchro signal amplifiers (sync amps)</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean, inspect, and lubricate</li> <li>• Test sync amps</li> <li>• Operation</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• Military Handbook, Synchros Description and Operation</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 15, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on synchro theory, operation of sync amps, light off procedures, trouble indications, and maintenance procedures.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Gyrocompass Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Operate and perform maintenance on gyrocompass systems</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform an alignment.
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 15, 16, 19, 20, 21</li> <li>• NAVSEA Tech Manual for AN/WSN-2 Gyrocompass, 0924-LP-066-8010</li> <li>• NAVSEA Tech Manual for AN/WSN-2/2A Gyrocompass, SN340-BO-MMD-010</li> <li>• NAVSEA Tech Manual for AN/WSN-3A(V)2 Gyro Navigator, NTP S-20-7610B</li> <li>• NAVSEA Tech Manual for AN/WSN-5 Inertial Navigation Set, S9427-DA-MMO-020</li> <li>• NAVSEA Tech Manual for MK 19 MOD 3D Gyrocompass, 0924-LP-038-2010</li> <li>• NAVSEA Tech Manual for MK 19 MOD 3D/E Gyrocompass, 0924-LP-038-2030</li> <li>• NAVSEA Tech Manual for MK 19 MOD 3AM/3BM/3CM/3F, S9426-AH-MMM-010</li> <li>• NAVSEA Tech Manual for MK 23 MOD C-3 Gyrocompass, 0924-LP-006-7010</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory, procedures for starting and securing, differences among gyrocompasses, and equipment used to support operation of the gyrocompass.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Gyrocompass Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on gyrocompass repeaters</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and the procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean, inspect, and lubricate</li> <li>• Test</li> <li>• Adjust</li> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420,</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 15, 16, 19, 20, 21</li> <li>• NAVSEA Technical Manual for Ships Course Indicators</li> <li>• NAVSEA Technical Manual for Digital Electronic Ship's Course Indicator</li> <li>• Basic Machines, Chapters 6, 11, 12, and 15, NAVEDTRA 12061</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, alignment procedures, common problems and their causes, and repair procedures.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on synchro devices</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Test</li> <li>• Troubleshoot</li> <li>• Replace</li> <li>• Align</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 15, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on synchro theory, alignment, common problems, testing procedures, and maintenance.



## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on dead reckoning tracers (DRT)</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean, inspect, and lubricate</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapter 420</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• DRT MK 6 MOD 4B/C/E</li> <li>• DRT MK 6 MOD 4B</li> <li>• DRT MK 6 MOD 4/4A</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, features, inputs, gearing, and maintenance and test procedures on the DRT.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on dead reckoning analyzer indicator (DRAI) and dead reckoning analyzer (DRA)</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean, inspect, and lubricate</li> <li>• Operate</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• DRAI MK 10 MOD 0, 0924-LP-059-7010</li> <li>• DRAI MK 9 MOD 4, SE178-AQ-MMF-010</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, inputs, outputs, starting, operating, and maintenance procedures.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on synchro systems</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean, inspect, and lubricate</li> <li>• Test</li> <li>• Adjust/align</li> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 420, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 15, 16, 19, 20, 21</li> <li>• Military Handbook, Synchros Description and Operation</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, common problems, alignment procedures, testing methods, different types of synchros, synchro identification, and circuit identification.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering System</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on and raise/lower rodmeter</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean, inspect, and lubricate</li> <li>• Test</li> <li>• Troubleshoot</li> <li>• Repair components</li> <li>• Raise/lower</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• Basic Machines, NAVEDTRA 12199</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK 4 MOD 1</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK 5 MOD 1</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK 6 MODs 0, 1, and 2</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you	You can expect questions on theory of operation, procedures on raising and lowering, common problems and their symptoms, testing

answer exam questions correctly:	procedures, circuit designation, and classification.
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## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on the underwater and dummy logs</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean, inspect, and lubricate</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment, (Electromagnetic Type), MK 4 MOD 1</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK 5 MOD 1</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK 6 MODs 0, 1, and 2</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory, basic functions, operation, common problems, and maintenance procedures.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on wind speed and direction detectors</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean, inspect, and lubricate</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapter 300</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• Military Handbook, Synchros Description and Operation</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• NAVSEA Technical Manual, Wind Indicating Equipment, Type F</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, safety precautions, maintenance procedures, and basic circuit operation.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on valve position indicating systems</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean, inspect, and lubricate</li> <li>• Test</li> <li>• Adjust</li> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• Basic Machines, NAVEDTRA 12199</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory, adjustment procedures, and common problems.



## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on salinity system</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Operate</li> <li>• Clean and inspect</li> <li>• Lubricate (cells and dump valve)</li> <li>• Test</li> <li>• Adjust</li> <li>• Troubleshoot (cells and dump valve)</li> <li>• Repair</li> <li>• Replace (cells and dump valve components)</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 220, 531, 533</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• NAVSEA Technical Manual for Salinity Indicating Equipment, IC/SB-7B/-15B/-7R/15R</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, troubleshooting, repair, and maintenance procedures.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on boiler water-level indicating system</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 221, 300, 504, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on equipment, theory of operation, alarm setting procedures, and circuit designation.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering System</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on temperature monitoring system</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following. <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Test</li> <li>• Adjust</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 504</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on thermocouple theory, the different types of systems and the operation of those systems, and circuit designations.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Indicating and Metering System</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on airflow sensor and indicators</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedure used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Test</li> <li>• Adjust</li> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components (indicator)</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• NAVSEA Technical Manual for Indicator and Alarm System Airflow IC/ASE-1</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, general maintenance procedures, setting alarm set points, and circuit designation.

## Advancement Handbook for IC3

<i>General IC Skill Area</i>	<b>Power Generation, Storage and Motors</b>
<i>A skill you are expected to perform from the General Skill Area above:</i>	<b>Perform maintenance on motor generator (MG) sets and MG set controllers</b>
<i>Knowledge you should have to perform this skill:</i>	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Test</li> <li>• Seat brushes</li> </ul>
<i>References you should study to gain the knowledge you need to perform this skill:</i>	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160,2</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• Slip Ring Maintenance Handbook</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on brush seating procedures, theory of operation, and operating parameters.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Power Generation, Storage and Motors</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on storage batteries</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Test</li> <li>• Regulate specific gravity</li> <li>• Replace</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 077, 090, 300, 313, 320</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory, maintenance procedures, safety precautions, and hazmat handling.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Flight Deck and Aviation Support Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on the stabilized glide slope indicator (SGSI) system and wave off lights</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Lubricate (SGSI)</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVAIR Technical Manual for Stabilized Glide Slope Indicator (SGSI)</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, operating, and maintenance procedures.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Auxiliary Electrical Equipment</b>
<i>A skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on ship's whistle</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Lubricate</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation procedures, theory of operation, and maintenance and safety procedures.



## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Auxiliary Electrical Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on impressed current cathodic protection (CAPOC) systems</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"><li>• Clean and inspect</li><li>• Test</li></ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"><li>• NSTM, Chapters 300, 633</li><li>• IC, Volume 1, NAVEDTRA 12160</li><li>• Electrician's Mate, NAVEDTRA 12164</li></ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, maintaining logs, different types of cathodic protection, and maintenance and testing procedures.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Technical Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Draw wiring schematics and analyze schematic diagrams</b>
<i>Knowledge</i> you should have to perform this skill:	Identify symbols, techniques, and publications used in various types of schematics to perform the following: <ul style="list-style-type: none"> <li>• Draw wiring schematics</li> <li>• Analyze schematic diagrams</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NEETS Modules 4 and 19</li> <li>• Blueprint Reading and Sketching, NAVEDTRA 12014</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on different types of schematics, various symbols used in drawing, and the techniques used to draw different types of schematics.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Technical Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Review Hazardous Materials (HAZMAT) User's Guide (HMUG), clean and inspect HAZMAT containers</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the publications and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Review current HAZMAT instructions (including HMUG)</li> <li>• Clean and inspect HAZMAT containers</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• HMUG</li> <li>• NSTM, Chapters 077, 593, 670</li> <li>• SORN, OPNAVINST 3120.32</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on content of the HMUG. You also can expect questions on the general use and procedures used to clean and inspect HAZMAT containers.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Basic Electrical Theory</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Apply a basic understanding of electrical theory to associated IC/electrical gear</b>
<i>Knowledge</i> you should have to perform this skill:	Define the theories as they apply to the following: <ul style="list-style-type: none"> <li>• Direct current, energy, and matter</li> <li>• Alternating current and transformers</li> <li>• Circuit protection and control</li> <li>• Electrical conductors</li> <li>• Generators and motors</li> <li>• Synchros and servos</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NEETS Modules 1, 2, 3, 4, 5, 15</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on electrical theory, safety, and maintenance.

## Advancement Handbook for IC3

General IC <i>Skill Area</i>	<b>Basic Electronics</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Apply a basic understanding of electronic theory to associated IC/electronic gear</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the theories as they apply to the following:</p> <ul style="list-style-type: none"> <li>• Electronic emission, tubes, and power supplies</li> <li>• Solid-state devices and power supplies</li> <li>• Amplifiers</li> <li>• Logic circuits</li> <li>• Microelectronics</li> <li>• Gyros</li> <li>• Fiber optics</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NEETS Modules 6, 7, 8, 13, 14, 15, 24</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on how amplifiers work, how circuits function, and the characteristics of circuit components.

## Part 2

### Advancement Handbook for IC2

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Switches, Protective Devices, and Cables</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot automatic bus transfer (ABT) equipment</b>
<i>Knowledge</i> you should have to perform this skill:	Describe the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Adjust</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 302, 320, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• Navy Occupational Safety and Health (NAVOSH) Program Manual, OPNAVINST 5100.19</li> <li>• Ships' Maintenance Material Management (3-M) Manual, OPNAVINST 4790.4</li> <li>• Navy Electricity and Electronics Training Series (NEETS), Modules 1, 2, 3, 4, 5, 6, 7, 8, 13, 14, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the operation of ABTs, and on what adjustments can be made to them, as well as wiring/repair techniques and applicable electrical/electronic theory.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Switches, Protective Devices, and Cables</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Repair cables</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and techniques used to perform the following:</p> <ul style="list-style-type: none"> <li>• Splice</li> <li>• Install junction boxes</li> <li>• Repair connections inside junction boxes and equipment</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the characteristics of cables, wiring techniques, and equipment used to repair cables.



## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Switches, Protective Devices, and Cables</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot circuit breakers</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the principles of operation. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Replace</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 7, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on circuit breaker operation, common problems and their causes, and troubleshooting techniques.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Switches, Protective Devices, and Cables</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot and test fiber optic cables</b>
<i>Knowledge</i> you should have to perform this skill:	Describe the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 408, 491</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 13, 14, 16, 19, 21, 24</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the operation of fiber optic equipment, cables, procedures for testing, common troubleshooting techniques, and any applicable electrical/electronic theory.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Power Distribution</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot voltage regulators</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Adjust</li> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 320</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 7, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the operation of voltage regulators, how to adjust, troubleshoot, and repair them.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Power Distribution</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Operate IC and ACO switchboards</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Align</li> <li>• Clean and inspect</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NEETS Modules 1, 2, 3, 4, 16, 19, 21</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• Navy Installation and Maintenance Book</li> <li>• EIMB</li> <li>• NAVSEA Technical Manual for IC Switchboards</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on alignment, what to look for during inspections, causes of worn and frayed conductors, testing procedures, and trouble indicators.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Power Distribution</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Inspect switchboard meters and transformers</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Test</li> <li>• Clean and inspect</li> <li>• Replace</li> <li>• Inspect switchboard meters</li> <li>• Identify the different types of calibration stickers</li> <li>• Troubleshoot (transformers)</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NEETS Modules 1, 2, 3, 4, 16, 19, 21</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• MEASURE User's Manual</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, calibration stickers and their meanings, different types of meters, and sensitivity of meters. There also may be questions on why transformers are used and how they are wired.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Power Distribution</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot power supplies</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Adjust</li> <li>• Troubleshoot/repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 320, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the different types of power supplies, the different adjustments that can be made, and the electrical/electronic theory of operation.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Power Distribution Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on IC test panels</b>
<i>Knowledge</i> you should have to perform this skill:	Define operational theory. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Repair</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 320, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation of the test panel, basic wiring techniques, and the use of test equipment.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Amplified Voice and Call Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot central amplifier systems (1MC, 5MC, etc.)</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Adjust</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 16, 19, 21</li> <li>• NAVSEA Technical Manual for Amplifier Control Group, AN/SIA-120</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on what adjustments can be made and how to make them, trouble indications, and operating parameters.



## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Telephone Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Repair sound powered telephone amplifiers</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 16, 19, 21</li> <li>• NAVSEA Technical Manual for Sound-Powered Telephone System, AN/WTC-2(V)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on amplifier theory, types of amplifiers, amplifier ratings, common amplifier problems and repair procedures.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Alarms and Warning Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot, test, and adjust alarm sensing devices</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Describe the different types. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430, 504</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, different types of sensing devices, which device is used in a particular alarm circuit, circuit designations, and repair and replacement procedures.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Alarms and Warning Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Repair alarm switchboards</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Identify the safety precautions, equipment, and procedures used to complete the following:</p> <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 21</li> <li>• NAVSHIPS Technical Manual for Alarm Switchboard, IC-S 30</li> <li>• NAVSEA Technical Manual for Type IC/SM Alarm Switchboards</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the various types of alarm switchboards, problems that occur and their causes, and wiring of alarm sensors into the system.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Ship's Entertainment Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on ship's audiovisual entertainment systems and public address sets</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 16, 19, 21, 23</li> <li>• NAVSEA Technical Manual for Ship's Entertainment and Training System</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, theory, testing, and maintenance procedures for both the PA system and ship's entertainment system. You also can expect questions on dynamics of speakers and microphones.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Gyrocompass Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot synchro signal amplifiers (sync-amps)</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Adjust</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• Military Handbook, Synchros Description and Operation</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on synchro theory, gear trains, common problems, and troubleshooting techniques.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Gyrocompass Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on gyrocompass repeaters</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and the procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Adjust</li> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420,</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 15, 16, 19, 20, 21</li> <li>• NAVSEA Technical Manual for Ships Course Indicators</li> <li>• NAVSEA Technical Manual for Digital Electronic Ship's Course Indicator</li> <li>• Basic Machines, Chapters 6, 11, 12, and 15, NAVEDTRA 12061</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, alignment procedures, common problems and their causes, and repair procedures.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on underwater log's speed and distance transmitter and the dummy log circuit</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to test the transmitters.
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK 4 MOD 1</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK 6 MODs 0, 1, and 2</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operational theory, maintenance procedures and basic troubleshooting techniques.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on ship's control console</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean, inspect, and lubricate</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 15, 16, 19, 20, 21</li> <li>• Military Handbook, Synchros Description and Operation</li> <li>• NAVSEA Technical Manual for Ships Course Indicators</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory, basic functions, operation, common problems, and maintenance procedures.



## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on shaft tachometers</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean, inspect, and lubricate</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 15, 16, 19, 20, 21</li> <li>• NAVSHIPS Technical Manual for Propeller Revolution Indicating Equipment</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operational theory, basic functions, operation, common problems, and maintenance procedures.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on wind direction/speed transmitters and detectors</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Troubleshoot</li> <li>• Adjust</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVSEA Technical Manual for Wind Indicating Equipment, Type F</li> <li>• Basic Machines, NAVEDTRA 12199</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on electrical and mechanical operation, the different adjustments that can be made, and basic troubleshooting techniques.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot salinity panels and associated equipment</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Adjust</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• Basic Machines, NAVEDTRA 12199</li> <li>• NAVSEA Technical Manual for Salinity Indicating Equipment, Types IC/SB-7B/-15B/-7R/-15R</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on testing procedures, basic operation, adjustments, and troubleshooting techniques.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
<i>A skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot boiler water level indicators</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures required to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Adjust</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491, 504</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, the electrical/mechanical adjustments that can be made, and troubleshooting techniques.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot temperature monitoring systems</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491, 504</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on basic operation, equipment, and troubleshooting techniques.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot ventilation airflow sensors</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Adjust</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVSEA Technical Manual for Indicator and Alarm System Airflow, IC/ASE-1</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, adjustments, and troubleshooting techniques.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Indicating and Metering System</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on tank level indicator systems</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Define the operating principles. Identify the safety precautions, equipment, and procedure used to perform the following:</p> <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Test</li> <li>• Adjust</li> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 20, 21</li> <li>• NAVSEA Technical Manual for Tank Level Indicators</li> <li>• NAVSEA Technical Manual for Liquid Level Indicating Equipment</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on theory of operation, general maintenance procedures, setting alarms, circuit designation, and types of equipment used to indicate and transmit.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on digital dead reckoning tracers (DDRTs) and inertial navigation tactical plotting system (INTPS)</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVSEA Technical Manuals for Dead Reckoning Tables, MK 6 MODs 4C/4B/4A/4E</li> <li>• NAVSEA Technical Manual for Digital Dead Reckoning Tracer, MK 6 MOD 4E</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on DDRT/INTPS functions and different modes of operation/scales, gearing principles, and testing and cleaning procedures.



## Advancement Handbook for IC2

<i>General IC Skill Area</i>	<b>Power Generation, Storage and Motors</b>
<i>A skill you are expected to perform from the General Skill Area above:</i>	<b>Troubleshoot MG sets</b>
<i>Knowledge you should have to perform this skill:</i>	<p>Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Adjust brush riggings</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References you should study to gain the knowledge you need to perform this skill:</i>	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• Slip Ring Maintenance Handbook</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on basic operation, adjustment procedures, trouble indications, and troubleshooting techniques.

## Advancement Handbook for IC2

<i>General IC Skill Area</i>	<b>Power Generation, Storage, and Motors</b>
<i>A skill you are expected to perform from the General Skill Area above:</i>	<b>Troubleshoot MG set controllers</b>
<i>Knowledge you should have to perform this skill:</i>	<p>Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Test</li> <li>• Adjust</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References you should study to gain the knowledge you need to perform this skill:</i>	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, adjusting, testing, and troubleshooting techniques.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Flight Deck and Aviation Support Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Test stabilized glide slope indicator</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedure used to perform the following: <ul style="list-style-type: none"> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVAIR 51-5B-2, Technical Manual for SGSI</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, and testing procedures.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Flight Deck and Aviation Support Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on helicopter operations surveillance system (HOSS)</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedure used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Lubricate</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVAIR 51-60-B-1, Technical Manual for HOSS</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, maintenance, and testing procedures.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Flight Deck and Aviation Support Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on integrated launch and recovery television system.</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Clean and inspect</li> <li>• Lubricate</li> <li>• Align</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVAIR 51-60-8-13, Technical Manual for ILARTS system</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, alignment and testing procedures, as well as theory of operation. You also can expect questions on monitoring equipment.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Flight Deck and Aviation Support Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on Fresnel lens optical landing system deck edge assemblies</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Inspect</li> <li>• Lubricate</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVAIR Technical Manuals for Fresnel Lenticular System</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, alignment and testing procedures, as well as theory of operation. You also can expect questions on monitoring equipment.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Auxiliary Electrical Equipment</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Clean and inspect data multiplex systems (DMS) and fiber optic data multiplexing systems (FODMS)</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 320, 420, 430 491, 633</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVSEA Technical Manual (Support Volume) for DMS, SE182-AV-MMM-010</li> <li>• NAVSEA Technical Manual for DMS, SE182-AV-MMM-021, Volume 2, part 1</li> <li>• NAVSEA Technical Manual for DMS, SE182-AV-MMM-023, Volume 2, part 3</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation and maintenance procedures for both the DMS and FODMS systems.

## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Technical Administration</b>
<i>A skill</i> you are expected to perform from the General Skill Area above:	<b>Verify equipment calibration schedules</b>
<i>Knowledge</i> you should have to perform this skill:	Identify calibration requirements by utilizing the following references: <ul style="list-style-type: none"> <li>• Portable Electrical/Electronic Test Equipment (PEETE)</li> <li>• Metrology and Calibration (METCAL)</li> <li>• Metrology Automated System for Uniform Recall and Reporting (MEASURE) User's Manual</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• PEETE</li> <li>• METCAL</li> <li>• MEASURE User's Manual</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on what forms are used, calibration intervals, and verification procedures.



## Advancement Handbook for IC2

General IC <i>Skill Area</i>	<b>Technical Administration</b>
<i>A skill</i> you are expected to perform from the General Skill Area above:	<b>Review HAZMAT inventories</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the publications and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Review HAZMAT inventories</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapter 670</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Hazardous Materials User's Guide (HMUG)</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on what publications are used, safe handling procedures, and inventory procedures.

## Part 3

### Advancement Handbook for IC1

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Switches, Protective Devices, and Cables</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Test phase sequence of shore power connections</b>
<i>Knowledge</i> you should have to perform this skill:	<p>Identify the safety precautions, equipment, and procedures used to perform the following:</p> <ul style="list-style-type: none"> <li>• Test phase sequence</li> <li>• Identify incorrect sequence and actions to be taken</li> <li>• Identify correct sequence</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 320</li> <li>• EOSS procedures</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the procedures for testing shore power phase rotation.

## Advancement Handbook for IC1

General IC Skill Area	<b>Switches, Protective Devices, and Cables</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Repair/replace fiber optic cables</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Repair</li> <li>• Replace</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 408</li> <li>• NEETS Module 24</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the procedures for testing and the techniques for repairing and replacing fiber optic cables.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Power Distribution</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot main, local, and ACO, IC switchboards</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 320, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• Electrician's Mate, NAVEDTRA 12164</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the operation of IC switchboards, testing techniques, and safety precautions.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Amplified Voice and Call Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot central amplifier systems (1MC, 5MC, etc.)</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 16, 19, 21</li> <li>• NAVSEA Technical Manual for Amplifier Control Group, AN/SIA-120</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on what adjustments can be made and how to make them, trouble indications, operating parameters, and repair techniques.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Ship's Entertainment Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Operate and perform maintenance on ship's entertainment systems</b>
<i>Knowledge</i> you should have to perform this skill:	Define the operating principles. Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Align</li> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 16, 19, 21</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NAVSEA Technical Manual for Ship's Entertainment and Training System</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operating procedures, alignment, maintenance, and testing techniques.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot underwater log speed and distance transmitters</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Adjust</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• Navy Occupational Safety and Health (NAVOSH) Program Manual, OPNAVINST 5100.19</li> <li>• Ships' Maintenance Material Management (3-M) Manual, OPNAVINST 4790.4</li> <li>• Navy Electricity and Electronics Training Series (NEETS), Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK 4 MOD 1</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK 6 MODs 0, 1, and 2</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on adjusting, troubleshooting, testing techniques, and repairing.



## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot ship's control console</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Adjust</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430, 491, 562</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 16, 19, 21, 23</li> <li>• NAVSEA Technical Manual for Ships Course Indicator</li> <li>• Military Handbook, Synchros Description and Operation</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on adjusting, troubleshooting, and repairing.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot shaft tachometers</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Adjust</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• Military Handbook, Synchros Description and Operation</li> <li>• NAVSHIPS Technical Manual for Propeller Revolution Indicating Equipment</li> <li>• Basic Machines, NAVEDTRA 12199</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the operation, adjustments, and basic troubleshooting techniques for both the electrical and mechanical components.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Replace components of the wind direction/speed transmitters and detectors</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVSEA Technical Manual for Wind Indicating Equipment, Type F</li> <li>• Basic Machines, NAVEDTRA 12199</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on electrical and mechanical operation, the different adjustments that can be made, and basic troubleshooting techniques.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Flight Deck and Aviation Support Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Perform maintenance on vertical take-off optical landing system (VTOLS)</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedure used to perform the following: <ul style="list-style-type: none"> <li>• Clean and inspect</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 320, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVAIR 51-60-11, Technical Manual for VSTOL system</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation and maintenance of the system.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Auxiliary Electrical Equipment</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Troubleshoot CAPOC systems</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precaution, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Troubleshoot</li> <li>• Adjust</li> <li>• Repair</li> <li>• Replace components</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 320, 420, 430 491, 633</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on operation, adjustments that can be made and when to make them, and troubleshooting techniques.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Auxiliary Electrical Equipment</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Test DMS and FODMS systems</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Test</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 320, 408, 420, 430 491, 633</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21, 24</li> <li>• NAVSEA Technical Manual (Support Volume) for DMS, SE182-AV-MMM-010</li> <li>• NAVSEA Technical Manual for DMS, SE182-AV-MMM-021, Volume 2, part 1</li> <li>• NAVSEA Technical Manual for DMS, SE182-AV-MMM-023, Volume 2, part 3</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on testing procedures and operation on both systems.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Technical Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Verify the accuracy of ship's blueprints and system diagrams</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the procedures and publications used to verify the following: <ul style="list-style-type: none"><li>• Ship's blueprints</li><li>• System diagrams</li></ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"><li>• Blueprint Reading and Sketching, NAVEDTRA 12014</li><li>• IC, Volume 3, NAVEDTRA 12162</li></ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the different types of schematics and drawings and the publications and steps used to verify them.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Technical Administration</b>
<i>A skill</i> you are expected to perform from the General Skill Area above:	<b>Prepare QA form and reports</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the publications, forms, and procedures used to prepare the following: <ul style="list-style-type: none"> <li>• QA reports</li> <li>• QA forms</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• Joint Forces Maintenance Manual (JFMM) CINCLANTFLT/CINCPACFLTINST 4790.3, Volume 4</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the different forms and reports and the procedures used to complete them.



## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Technical Administration</b>
<i>A skill</i> you are expected to perform from the General Skill Area above:	<b>Analyze impressed current CAPOC system logs</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the publications and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Analyze</li> <li>• Adjust</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 430, 491, 633</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 16, 19, 21, 23</li> <li>• NSTM, Chapter 633</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the adjustments that can be made and when they should be made.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Technical Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Document gyro compass service logs</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the contents of gyrocompass service logs.
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"><li>• NSTM, Chapter 420</li><li>• IC, Volume 1, NAVEDTRA 12160</li></ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the contents of a properly maintained service logbook.

## Advancement Handbook for IC1

General IC <i>Skill Area</i>	<b>Technical Administration</b>
<i>A skill</i> you are expected to perform from the General Skill Area above:	<b>Administer HAZMAT program.</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the procedures and publications used to perform the following: <ul style="list-style-type: none"> <li>• Implement</li> <li>• Inspect</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM Chapter 670</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• HMUG</li> <li>• SORN, OPNAVINST 3120.32</li> <li>• EDORM, COMNAVSURFLANT/PACINST 3540.22</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on publications and steps used to implement and maintain a functional HAZMAT program.

## Part 4

### Advancement Handbook for ICC

## Advancement Handbook for ICC

General IC <i>Skill Area</i>	<b>Indicating and Metering Systems</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Replace rodimeters (pit swords)</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to replace rodimeters.
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 420, 430, 491</li> <li>• IC, Volume 1, NAVEDTRA 12160</li> <li>• IC, Volume 2, NAVEDTRA 12161</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK 4 MOD 1</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK5 MOD 1</li> <li>• NAVSEA Technical Manual for Underwater Log Equipment (Electromagnetic Type), MK6 MODs 0, 1 and 2</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on replacement procedures for the rodimeter.

## Advancement Handbook for ICC

General IC <i>Skill Area</i>	<b>Auxiliary Electrical Equipment</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Identify faults on DMS and FODMS systems (to include interfaces)</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the safety precautions, equipment, and procedures used to perform the following: <ul style="list-style-type: none"> <li>• Identify faults</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• NSTM, Chapters 300, 310, 320, 408, 420, 430 491, 633</li> <li>• NAVOSH Program Manual, OPNAVINST 5100.19</li> <li>• Ships' 3-M Manual, OPNAVINST 4790.4</li> <li>• NEETS Modules 1, 2, 3, 4, 5, 6, 7, 8, 14, 15, 16, 19, 21, 24</li> <li>• NAVSEA Technical Manual (Support Volume) for DMS, SE182-AV-MMM-010</li> <li>• NAVSEA Technical Manual for DMS, SE182-AV-MMM-021, Volume 2, part 1</li> <li>• NAVSEA Technical Manual for DMS, SE182-AV-MMM-023, Volume 2, part 3</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on interfacing and maintenance group faults and their indications.

## Advancement Handbook for ICC

General IC <i>Skill Area</i>	<b>Technical Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Prepare/review casualty reports (CASREPS) and casualty corrections (CASCORS)</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the publications and procedures used to complete the following: <ul style="list-style-type: none"> <li>• Prepare</li> <li>• Review</li> </ul>
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• IC, Volume 3, NAVEDTRA 12162</li> <li>• Engineering Administration, NAVEDTRA 12147</li> <li>• Operational Reports, Naval Warfare Publication (NWP 1-03.1)</li> <li>• Ships' Maintenance Material Management (3-M) Manual, OPNAVINST 4790.4</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the procedures, associated paper work, and routing of these reports.

## Advancement Handbook for ICC

General IC <i>Skill Area</i>	<b>Technical Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Conduct QA program inspections</b>
<i>Knowledge</i> you should have to perform this skill:	Identify the publications and instructions used to conduct inspections.
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> <li>• IC, Volume 3, NAVEDTRA 12162</li> <li>• Joint Forces Maintenance Manual (JFMM) CINCLANTFLT/CINCPACFLTINST 4790.3, Volume 4</li> </ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the QA program, the forms used, and when inspections are required.



## Advancement Handbook for ICC

General IC <i>Skill Area</i>	<b>Technical Administration</b>
A <i>skill</i> you are expected to perform from the General Skill Area above:	<b>Analyze gyro compass service logs</b>
<i>Knowledge</i> you should have to perform this skill:	Identify problem indicator entries as well as other required entries in properly maintained gyrocompass logs.
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"><li>• NSTM, Chapter 430</li><li>• IC, Volume 3, NAVEDTRA 12162</li></ul>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the contents of a gyro log.

## Appendix 1

### References Used in This Advancement Handbook

<b>Rating</b>	<b>Short Title</b>	<b>Long Title</b>	<b>Chapters/ Paragraphs</b>	<b>Stocking Point</b>
<b>IC3 and IC2</b>	NSTM S9086-CL-STM-010	NSTM, Personnel Protection Equipment, NSN 0901-LP-077- 0040	Chapter 077	Note 1
	NSTM S9086-GY-STM-010	NSTM, Boilers, NSN 0901-LP-221-0050	Chapter 221	Note 1
	NSTM S9086-KC-STM-010	NSTM, Electric Plant General, NSN 0901- LP-011-9920	Chapter 300	Note 1
	NSTM S9086-KE-302-000	NSTM, Electric Motors and Controllers, NSN 0901-LP-302-0000	Chapter 302	Note 1
	NSTM S9086-KN-STM-010	NSTM, Electric Power Generators and Conversion Equipment, NSN 0901-LP-310-0010	Chapter 310	Note 1
	NSTM S9086-KR-STM-010	NSTM, Portable Storage and Dry Batteries, NSN 0901- LP-313-0010	Chapter 313	Note 1
	NSTM S9086-KY-STM-000	NSTM, Electric Power Distribution Systems, NSN 0901-LP-320- 0030	Chapter 320	Note 1
	NSTM S9086-PF-STM-010	NSTM, Fiber Optic Topology, Operation, Maintenance, and Repair, NSN 0901-LP- 641-0442	Chapter 408	Note 1
	NSTM S9086-NZ-STM-010	NSTM, Navigation Systems, Equipment and Aids, NSN 0901- LP-420-0010	Chapter 420	Note 1
	NSTM S9086-PA-STM-000	NSTM, Interior Communication Installations, NSN 0901-LP-430-0000	Chapter 430	Note 1

	NSTM S9086-Q5-STM-000	NSTM, Electrical Measuring and Test Instruments, NSN 0901-LP-491-0010	Chapter 491	Note 1
	NSTM S9086-RJ-STM-000	NSTM, Pressure, Temperature, and other Electromechanical Measuring Instruments, NSN 0901-LP-504-0020	Chapter 504	Note 1
	NSTM S9086-T8-STM-010	NSTM, Pollution Control, NSN 0901- LP-593-0030	Chapter 593	Note 1
	NSTM S9086-VF-STM-010	NSTM, Cathodic Protection, NSN 0901- LP-633-0030	Chapter 633	Note 1
	NSTM S9086-WK-STM-000	NSTM, Stowage, Handling, and Disposal of Hazardous General Use Materials, NSN 0901- LP-12-4820	Chapter 670	Note 1
	NAVAIR 51-40ABA- 10.1, FRESNEL	Fresnel Lenticular System, NSN 0851- LP-007-6700		Note 1
	NAVAIR 51-40ABA-11, FRESNEL	Fresnel Lenticular System, NSN 0851- LP-661-6231		Note 1
	NAVAIR 51-40ABA-14, FRESNEL	Fresnel Lenticular System, NSN 0851- LP-006-8710		Note 1
	NAVAIR 51-60B-1, AN/SXY-1, HOSS	Helicopter Operations Surveillance System, MIP 4326, NSN 0851- LP-010-8501		Note 1
	NAVAIR 51-60-8-13, ILARTS	Integrated Launch and Recovery Television Surveillance System, NSN 0851-LP-010- 5508		Note 1
	NAVAIR 51-5B-2, SGSI	Stabilized Glide Slope Indicator, MK 1 MOD		Note 1

		4, NSN 0851-LP-006-1051		
	NAVAIR 51-5B-3	Wave-Off Light System MK 1 MOD 0, NSN 0581-LP-005-9541		Note 1
	NAVEDTRA 12199	Basic Machines, NSN 0503-LP-478-6800		Note 1
	NAVEDTRA 12014	Blueprint Reading and Sketching, NSN 0502-LP-479-3600	Chapters 1,2,3,and 4	Note 1
	NAVEDTRA 12164	Electrician's Mate, NSN 0502-LP-001-8380		Note 1
	NAVEDTRA 12160	Interior Communications Electrician, Volume 1, NSN 0502-LP-479-5700		Note 1
	NAVEDTRA 12161	Interior Communications Electrician, Volume 2, NSN 0502-LP-476-5700		Note 1
	NAVEDTRA B72-01-00-92	Navy Electricity and Electronics Training Series (NEETS), Module 1, Introduction to Matter, Energy, and Direct Current, NSN 0507-LP-214-1300		Note 1
	NAVEDTRA 172-02-00-91	NEETS, Module 2, Introduction to Alternating Current and Transformers, NSN 0507-LP-216-2900		Note 1
	NAVEDTRA B72-03-00-93	NEETS, Module 3, Introduction to Circuit Protection, Control, and Measurement, NSN 0507-LP-477-6700		Note 1

	NAVEDTRA B72-04-00-92	NEETS, Module 4, Introduction to Electrical Conductors, Wiring Techniques, and Schematic Reading, NSN 0507-LP-217-8300		Note 1
	NAVEDTRA B72-05-00-94	NEETS, Module 5, Introduction to Generators and Motors, NSN 0507-LP-478-1400		Note 1
	NAVEDTRA B72-06-00-92	NEETS, Module 6, Introduction to Electronic Emission, Tubes, and Power Supplies, NSN 0507-LP-217-7900		Note 1
	NAVEDTRA B72-07-00-92	NEETS, Module 7, Introduction to Solid State Devices and Power Supplies, NSN 0507-LP-218-7400		Note 1
	NAVEDTRA 172-08-00-82	NEETS, Module 8, Introduction to Amplifiers, NSN 0507-LP-172-0800		Note 1
	NAVEDTRA 172-14-00-84	NEETS, Module 14, Introduction to Microelectronics, NSN 0507-LP-172-1400		Note 1
	NAVEDTRA B72-15-00-93	NEETS, Module 15, Principals of Synchros, Servos, and Gyros, NSN 0507-LP-476-5900		Note 1
	NAVEDTRA B72-16-00-96	NEETS, Module 16, Introduction to Test Equipment, NSN 0507-LP-481-2700		Note 1
	NAVEDTRA B72-19-00-92	NEETS, Module 19, The Technicians Handbook, NSN 0507-LP-218-5600		Note 1

	NAVEDTRA 172-21-00-87	NEETS, Module 21, Test Methods and Practices, NSN 0507-LP-172-2100		Note 1
	NAVEDTRA B72-23-00-91	NEETS, Module 23, Magnetic Recording, NSN 0507-LP-215-7900		Note 1
	NAVEDTRA B72-24-00-92	NEETS, Module 24, Introduction to Fiber Optics, NSN 0507-LP-218-0100		Note 1
	NAVSEA Tech. Manual, 0965-LP-064-4010	Amplifier-Control Group AN/SIA-120, NSN 0965-LP-064-4010		Note 1
	NAVSEA Tech. Manual, SN0924-LP-066-8010	AN/WSN-2 Gyrocompass, NSN 0924-LP-066-8010		Note 1
	NAVSEA Tech. Manual, SN340-BO-MMD-010	AN/WSN2/2A Gyrocompass, NSN 0910-LP-314-0080		Note 1
	NAVSEA Tech. Manual, S9427-DA-MMO-020	AN/WSN-5 Inertial Navigation Set, Volume 2, NSN 0910-LP-721-95005		Note 1
	NAVSEA Tech. Manual, SE165-AC-MMO-010	AN/WTC-1(V) Central Office Telephone, NSN 0910-LP-000-9600		Note 1
	NAVSEA Tech. Manual, SE165-AD-MMM-010	AN/WTC-2(V) Sound-Powered Telephone System, NSN 0910-LP-311-2400		Note 1
	NAVSEA Tech. Manual (Support Volume), SE182-AV-MMM-010	Data Multiplex System AN/USQ-82, NSN 0910-LP-309-9000		Note 1
	NAVSEA Tech. Manual(Part 1), SE182-AV-MMM-021	Data Multiplex System AN/USQ-82(V), NSN 0910-LP-309-2700		Note 1
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		309-2900		
	NAVSEA Tech. Manual, S9561-BV-SSM-010	DDG 51 Class Steering System, NSN 0910-LP-333-1700		Note 1
	NAVSEA Tech. Manual, 0924-LP-059-7010	Dead Reckoning Analyzer Indicator(DRAI), MK 10 MOD 0, NSN 0924- LP-059-7010		Note 1
	NAVSEA Tech. Manual, SE170-AP- MM0-010	Dead Reckoning Tracer/s(DRT), MK 6 MODs 4/4A, NSN 0910-LP-000-3650		Note 1
	NAVSEA Tech. Manual, SE170-AN- MMF-020	Dead Reckoning Tracer/s(DRT), MK 6 MODs 4B/C/E, NSN 0910-LP-641-2512		Note 1
	NAVSEA Tech. Manual, SE0965-068- 0510	Dead Reckoning Tracer/s(DRT), MK 6 MOD 4B, NSN 0965- LP-068-5 010		Note 1
	NAVSEA Tech. Manual, SE170-AN- MMF-010	Digital Dead Reckoning Tracer, MK 6 MOD 4E, NSN 0910- LP-307-6000		Note 1
	NAVSEA Tech. Manual, SN577-AB- MMO-010	Digital Electronic Ships Course Indicator, NSN 0910- LP-314-5700		Note 1
	NAVSEA Tech. Manual, SE168-AC- MM0-010	Indicator and Alarm System Airflow IC/ASE-1, NSN 0910- LP-043-2100		Note 1
	NAVSEA Tech. Manual, SE105-AQ- MMO-010	Integrated Voice Communication System, NSN 0910- LP-306-8100		Note 1
	NAVSEA Tech. Manual, SE105-AK- MMO-010	Interior Communication Stations LS-518A/SIC and LS-519A, NSN 0910-LP-073-2160		Note 1

	NAVSEA Tech. Manual, SE677-AB- MM0-010	Interior Communications Switchboards, NSN 0910-LP-000-9430		Note 1
	NAVSEA Tech. Manual, SN600-AD- MMD-010	Liquid Level Indicating Equipment, NSN 0910-LP-641- 1235		Note 1
	NAVSEA Tech. Manual, SE101-BE- MMM-010	Loud Speakers, LS- 305,306/SIC NSN 0910-LP-311-9100		Note 1
	NAVSEA Tech. Manual, SE120-AE- MMA-010	Microphone Control Station IC/MSB-2, NSN 0910-LP-004- 4700		Note 1
	NAVSEA Tech. Manual, SE170-AP- MMO-010	MK 6 MOD 4/4A DRT, NSN 0910-LP-000- 3650		Note 1
	NAVSEA Tech. Manual, SE178-AQ- MMF-010	MK 9 MOD 4 DRAI, NSN 0910-LP-300- 4000		Note 1
	NAVSEA Tech. Manual, S0924-LP-038- 2010	MK 19 MOD 3D Gyrocompass Equipment, NSN 0924-LP-038-2010		Note 1
	NAVSEA Tech. Manual, S0924-LP-038- 2030	MK 19 MOD 3D/E Gyrocompass Equipment, NSN 0924-LP-038-2030		Note 1
	NAVSEA Tech. Manual, S9426-AH- MMM-050	MK 19 MOD 3F Gyrocompass Equipment, NSN 0910-LP-555-2200		Note 1
	NAVSEA Tech. Manual, S9426-AH- MMM-010	MK 19 MODs 3AM/BM/CM/3F, NSN 0910-LP-261-5600		Note 1
	NAVSEA Tech. Manual, 0924-LP-006- 7010	MK 23 MOD C-3 Gyro Compass Equipment, NSN 0924-LP-006- 7010		Note 1
	NAVSEA Tech Manual, SE000-01- IMB-010	Navy Installation and Maintenance Books		Note 1



	NAVSEA Tech Manual, ST000-AA-IDX-010-PEETE	Portable Electrical/ Electronic Test Equipment, NSN 0910-LP-615-0100		Note 1
	NAVSEA Tech. Manual, 0965-LP-078-4010	Public Address Set AN/SIH-7, NSN 0965-LP-078-4010		Note 1
	NAVSEA Tech. Manual, SN576-AA-MMA-010	Salinity Indicating Equipment Types IC/SB-7B, IC/SB-15B, IC/SB-7R, IC/SB-15R, NSN 0910-LP-062-4300		Note 1
	NAVSEA Tech. Manual, SN577-AC-MMO-010	Ships Course Indicators Types A, B, E, F, G, H, L, M, N, and S, NSN 0910-LP-075-9500		Note 1
	NAVSEA Tech. Manual, SE101-BN-MMC-010	Ships Entertainment and Training System, NSN 0910-LP-413-4800		Note 1
	NAVSEA Tech. Manual, SE101-B8-OMP-010	Shipboard Information Training and Entertainment (SITE) System, SITE 300, NSN 0910-LP-576-6800		Note 1
	NAVSEA Tech. Manual, S6269-AQ-HBK-010	Slip Ring Maintenance Handbook, NSN 0910-LP-066-1900		Note 1
	NAVSEA Tech. Manual, SN572-AH-MMA-010	Tank Level Indicators, NSN 0910-LP-234-4600		Note 1
	NAVSEA Tech. Manual, SE178-AR-MMO-010	Telephone Set Type G, NSN 0910-LP-003-9100		Note 1
	NAVSEA Tech. Manual, 0965-LP-080-8010	Type IC/SM Alarm Switchboards (4-220 lines), NSN 0965-LP-080-8010		Note 1
	NAVSEA Tech. Manual, 0965-LP-073-8010	Underwater Log Equipment, (Electromagnetic		Note 1

		Type), MK 4 MOD 1, NSN 0965-LP-073-8010		
	NAVSEA Tech. Manual, 0965-LP-073-9010	Underwater Log Equipment, (Electromagnetic Type), MK 5 MOD 1, NSN 0965-LP-073-9010		Note 1
	NAVSEA Tech. Manual, SE178-AL-MMM-010	Underwater Log Equipment (Electromagnetic Type) MK 6 MODs 0, 1, and 2, NSN 0910-LP-709-3200		Note 1
	NAVSEA Tech. Manual, 59514-DF-MMO-010	Vent Fog Precipitator 50 CFM Model 441100, NSN 0910-LP-347-3801		Note 1
	NAVSEA Tech. Manual, AM410-AB-MAN-000	Wind Indicating Equipment Type F, NSN 0850-LP-014-9000		Note 1
	NAVSHIPS Tech Manual 0965-LP-000-7000	Alarm Switchboard IC-S 30, NSN 0965-LP-000-7000		Note 1
	NAVSHIPS Tech. Manual, 0365-LP-266-5000	Propeller Revolution Indicating Equipment, NSN 0365-LP-266-5000		Note 1
	NAVSHIPS Tech. Manual, 0365-LP-283-5100	Shipboard Announcing Equipment Circuit 1MC and 6MC, NSN 0365-LP-283-5100		Note 1
	EDORM	Engineering Department Organization and Regulations Manual, COMNAVSURFLANT/PACINST 3540.22		Note 2
	HMUG, OPNAV PUB P-45-110-91	Hazardous Materials User's Guide, NSN 0420-LP-181-6600		Note 1
	MEASURE User's	Metrology Automated		Note 1

	Manual	System for Uniform Recall and Reporting (MEASURE), OP 43 P6B, NSN 0420-LP-182-8700		
	METCAL	Metrology and Calibration, NAVMATINST 4355.67 and 4734.1		Note 3
	Military Handbook, MIL-HDBK-225A	Synchros Description and Operation		Note 5
	Military Standard, MIL-STD-686C	Cable and Cord, Electrical; Identification, Marking, and Color Coding of		Note 5
	NAVOSH Program Manual, OPNAVINST 5100.19	Navy Occupational Safety and Health Program Manual for Forces Afloat		Note 3
	Navy Training Plan, NTP S-20-7610B	Electrically Suspended Gyro Navigator(ESGN) AN/WSN3/3A(V)2		Note 6
	Ships' 3-M Manual, OPNAVINST 4790.4	Ships' Maintenance and Material Management (3-M) Manual	Chapters 1,2,3,6, and Appendix B	Note 3
	SORN	Standard Organization and Regulations of the U.S. Navy, OPNAVINST 3120.32, NSN 0579-LD-057-2220		Note 1
<b>IC1 &amp; ICC</b>	NAVAIR 51-60-11, VSTOL OLS	Vertical and Short Take Off and Landing Optical Landing System, MK 11 MOD 0, NSN 0851-LP-005-0240		Note 1
	NWP 1-03.1	Operational Reports		Note 2
	JFMM	Joint Fleet		Note 4

	CINCLANTFLT/ CINCPACFLTINST 4790.3	Maintenance Manual, Volume 4		
<p><b>LEGEND:</b></p> <p>Note 1 – To order, MILSTRIP to Naval Inventory Control Point (NAVICP) Philadelphia, PA, or via INTERNET <a href="http://www.nll.navsup.navy.mil">http://www.nll.navsup.navy.mil</a></p> <p>Note 2 – To order, MILSTRIP to Naval Inventory Control Point (NAVICP) Philadelphia, PA, or via Navy Tactical Information Compendium (NTIC) Series B1 CD-ROMs (See your command naval warfare publications (NWP) custodian.)</p> <p>Note 3 – Available via INTERNET <a href="http://www.nll.navsup.navy.mil">http://www.nll.navsup.navy.mil</a> or <a href="http://www.dodssp.daps.mil/usndirs.htm">http://www.dodssp.daps.mil/usndirs.htm</a></p> <p>Note 4 – Available via INTERNET <a href="http://www.spear.navy.mil/JFMM">http://www.spear.navy.mil/JFMM</a></p> <p>Note 5 – To order, submit request on DD Form 1425, NSN 0102-LF-009-7400</p> <p>Note 6 – CNO N752, DSN: 227-3252</p>				